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JOHN D. RITCHIE, *Secretary.*

POULTRY AND EGGS

FOR

MARKET AND EXPORT.

BY

J. A. HENDERSON.

Published by Direction of the Hon. JOHN McKENZIE, Minister of Agriculture.

WELLINGTON.

BY AUTHORITY: SAMUEL COSTALL, GOVERNMENT PRINTER.

1896.

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[This pamphlet has had the advantage of being supervised by the author while going through the Press.]

INTRODUCTION.

THIS pamphlet is intended as a handy book of reference for farmers and others, showing them improved methods of poultry-keeping, so that they may derive a present benefit, and also be getting into a position to take advantage of foreign markets when these have been made fully available.

Directions for preparation and shipment of frozen poultry, based on Melbourne experience, and also hints as to the shipment of eggs, are appended.

The difference of the seasons in New Zealand and England will enable us to find a good market in London for both poultry and eggs at times of the year when we can most conveniently produce them. Our climate is well suited to the industry, and grain, &c., for food can be grown very cheaply.

Raising fowls for export is not thought to be a very payable industry by itself. It should be combined with egg-production, and so combined will pay best when made to take a place as part of a system of mixed farming.

The formation of societies for the improvement of poultry, as regards egg-laying and table qualities, is strongly to be recommended.

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POULTRY AND EGGS FOR MARKET AND EXPORT.

DOMESTIC FOWLS.

THE BIRDS TO KEEP.

As so little capital is required to be sunk in birds to breed from, it is poor economy to keep any but the best.

The main flock should be half-bred, but in order to have these two or more pure-breeds must be kept. A small number of the pure-bred birds will do, for a hen is able to reproduce herself many times in a breeding season.

It is not enough to get the right breeds to cross with. In each breed there are families or strains of different value to the farmer. A good strain for him means one in which the useful points—viz., egg-laying or table qualities—have been studied and brought out. This has to be done by breeding for several generations in succession from healthy birds that have been good layers or good table-fowls.

FANCY BIRDS.

It must not be presumed that a bird that takes first prize at a poultry-show is the best bird for the farmer. It may be the worst. Most of the pure-bred birds in this country are of the fancy class, and have been bred for showing only. They are deteriorated in useful qualities by in-breeding, by breeding from birds known to be poor layers, or weakly, because they show good points in feathers, by keeping back pullets from laying in order to increase their size, &c. The result is a loss of constitution. The birds themselves are subject to disease, and their chickens hard to rear. The egg-producing qualities have suffered even more. Many breeds once noted for laying have lost their good name through fancy breeding.

IMPROVING FANCY BIRDS.

If a good useful strain cannot be obtained, a systematic attempt must be made to improve the birds that can be got by breeding the good qualities into them. Get a cockerel from one fancier and hens from another. By thus crossing the two strains the lost qualities will reappear to a certain degree in some of the young birds, and by breeding from those that show them most a good result may be expected.

If a laying-breed is to be dealt with, choose a lively looking cockerel not too big of his kind, one that crows well, and at an early age, and mate him with hens that have a bright eye, a fine small head, and a young look about them.

If you are breeding for the table, pick the largest and best-framed birds. Fancy birds have not been, as a rule, deteriorated in size.

IMPROVING A STRAIN.

Breed only from the best layers and their progeny, or the best-framed birds, according to what is wanted. Never mind if your birds fall off in fancy points. A yearly record should be kept of the number of eggs laid by each pure-bred hen. This is troublesome, but the trouble is

amply repaid. Never breed from a bird that has had any disease, or been delicate as a chicken. Do not force breeding-birds to excessive laying by giving very stimulating food. Avoid in-breeding as much as possible, but when you have worked up a good strain, do not run the risk of throwing away the result of your labour by bringing an unknown cockerel into it. A hen possessing the desired qualities, and tested for egg-laying, if possible, should be used for introducing fresh blood. She should be mated to a cock of your own strain, and the best of the female progeny then mated with your own cock birds. Neighbours working together, improving the same breed, are a great help to one another in respect of getting fresh blood for a strain.

BREEDING CROSS-BREDS.

The first cross of two pure breeds produces the most profitable birds for the farmer. They are very hardy, are no trouble to rear, grow faster, and are more easily fattened than pure-breeds.

If it be impossible to keep two pure breeds, some good can be done to the common flock by getting a pure-bred cock of a good useful strain, and mating him with the best of the mongrel hens. If eggs only be wanted choose a Hamburg, Leghorn, or Minorca cock, and set the eggs from your best-laying hens. If table-birds, a game or Dorking cock, and set the eggs from the largest-framed hens. For combination of good qualities choose a Houdan. Never breed from a cross-bred cock.

BREEDS.

I shall confine myself to the most useful of the breeds that are readily to be got. Each breed has its distinguishing marks or points, but in a small work like this space will not allow them to be dwelt on. I shall give a few of their leading useful qualities instead. By knowing the latter we can obtain, either pure or in a cross, the exact bird we want.

THE NON-SITTING BREEDS.

Rather small sized as a class, but have the egg-producing qualities very strong, and do not become broody.

Leghorn.—Small, very hardy, and a good winter and summer layer. Large egg.

Minorca and *Andalusian*.—Not so small as Leghorn, hardy, good layer, but seldom lays in winter unless well sheltered. Very large egg.

Houdan.—Fair size, very hardy, good table-bird, fairly good layer. Large egg.

Hamburg.—Very small. Hard to rear in confinement. Good layer, but lays in summer only. Small egg.

THE SITTING BREEDS.

Langshan.—Very hardy. Good winter and summer layer. Good table-bird.

Brahma.—Hardy. Good winter layer. Fair table-bird.

Plymouth Rock.—Hardy. Very good table-bird. Fair winter and summer layer.

Cochin.—Very hardy. Unsited for table. Useful in a cross only.

Game.—Does not stand confinement very well, but a fair layer and good forager when at liberty. It is a very fine table-bird. Nearly all you see of it is flesh, the feathers lie so close.

Dorking.—Does not stand confinement well. The best table-bird of all. The chickens are rather hard to rear, unless they have a good run of short turf.

CROSSES FOR LAYING ONLY.

In all crosses use a cock of the breed first named.

For summer laying, Hamburg-Leghorn, Leghorn-Minorca, or Minorca-Hamburg.

For winter and summer laying, Leghorn-Plymouth Rock, Minorca-Brahma, Hamburg-Brahma, Hamburg-Cochin, Houdan-Leghorn; and, besides these, a Leghorn or Minorca cock may be crossed with a Langshan, Brahma, Plymouth Rock, or Cochin hen. I may here remark that it is easier to get good-laying strains of Minorcas and of Langshans than of other breeds.

To insure good laying in all the female progeny, both the pure-bred birds must be of a good laying strain.

If eggs are to be sent to London, try to get a cross that lays a tinted egg by using crosses with the Cochin, Langshan, Brahma, and Plymouth Rock hens.

CROSSES FOR LAYING AND FOR TABLE.

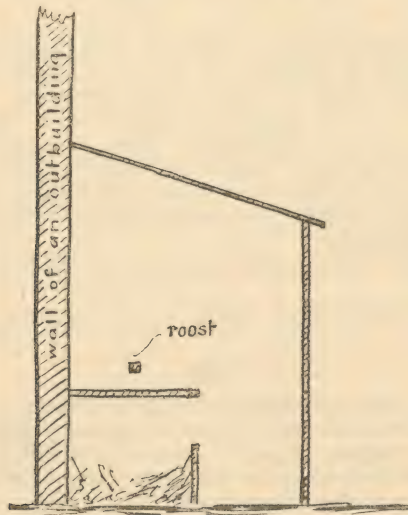
Choose a Houdan cock (with light coloured legs if breeding for the London market) and mate him with Dorking, Plymouth Rock, Cochin, or Brahma hens.

CROSSES FOR THE TABLE.

Indian Game-Dorking, Black-red Game-Dorking, Houdan-Dorking are the best crosses, and require scarcely any special fattening, but do not stand confinement very well. Other fair crosses are Dorking-Brahma and Plymouth Rock-Dorking.

HOUSES.

These should be well sheltered from cold winds, and face the sun. Wet ground will not do. A house 6ft. square and 4ft. high is large enough for a dozen birds in a bleak locality. More space is required in a warmer climate. Lean-to houses are cheap and convenient.



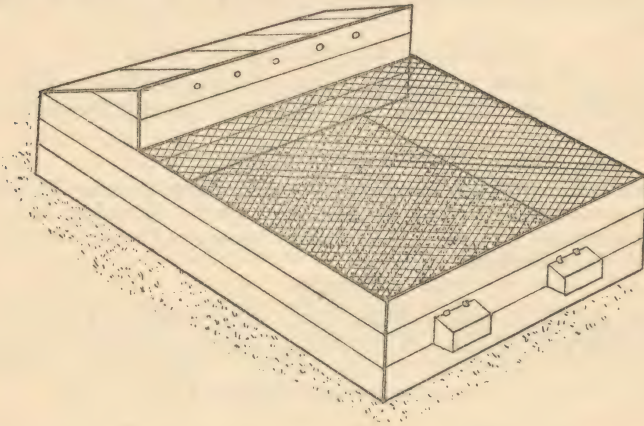
The roost is 18in. above the ground; 3in. or 4in. under it a plank runs along and catches the droppings. Under the plank, on the ground,

are the nests. There should be a small window, and the door should have a hole with a slide; also, there should be a hole at the top to let away foul air. Scantling $2\frac{1}{2}$ in. square, with the corners smoothed off, makes the best roost.

A very good house may be made of sods, and roofed with saplings and straw or rushes. An empty barrel laid on its side and a roost placed across will house one or two birds comfortably.

MOVABLE COOPS.

I recommend these very strongly to the farmer, as useful to shut up birds in for breeding, to keep pure-bred hens in to test their laying, and to rear chickens in. It keeps chickens healthy, and safe from every enemy except the thief.



It is simply a low-sided box without a bottom, the top being wired over (the bottom also, if chickens are put in it), and is intended to be placed on grass, and moved to fresh ground every day. At one end is a shelter. Under this a low roost if for grown birds, and a settle if for hen and chickens. The sides should be 20 in. high, and the wire mesh too small to let a rat through. Boxes with lids are placed outside, open towards inside of coop, for the water-vessel, and for grit. The birds must have an opportunity to dust themselves now and then, and must be examined for lice regularly.

Light active birds thrive best in such a coop, the heavier breeds often getting too fat.

The size for ten fowls could be 5 ft. by 8 ft., but more space would be an advantage.

RUNS.

The ground for the run should have good drainage. Light gravelly soil does best. When fowls are shut up, 12 square yards space should be allowed to each. A space 12 yards each way would thus keep twelve fowls. It should be kept clean by being dug over occasionally. If less space be allowed, some of the droppings will have to be removed.

Cheap enclosures may be made by a wire fence interwoven with manuka or other scrub, or flax. This is better than wire netting, being good shelter.

FOWLS IN CONFINEMENT.

Must have clean water, in clean vessels, kept shaded from the sun; hard and sharp gravel about the size of split peas, or a little larger; lime in some form, as egg-shells, burnt bones crushed, broken up oyster or other shells; green food, such as chopped up grass, green corn, water-cress, sowthistle, or a split mangold; soft food early in the morning, with a little chopped-up meat in it; light mid-day meal of soft food, or table-scraps; grain at night; some place besides the roosting-place for a shelter from cold winds, rain, and sun; a place where they can dust themselves.

A large box, with sand or earth mixed with coal-ashes and a little flour of sulphur, will do for dusting if it be refilled occasionally.

The planks under the roosts should be scraped clean every day, otherwise dry earth should be sprinkled to remove all smell. The house should be washed inside with a mixture of lime and carbolic twice a year. The birds should be examined now and then, and if found lousy dusted with Keating's insect-powder. The nests should be fresh strawed and dusted. If the small hen-house tick be troublesome, wash the roosts and house with sheep-dip, or kerosene and lime.

Wood charcoal, broken up, should be placed within the birds' reach.

HOW TO FEED FOWLS.

Fowls must be fed regularly all the year round. In confinement they should be fed very sparingly. No more should be given at one time than they will eat eagerly, and none left about. If they have their freedom there will be less risk of over-feeding. Fowls on farms are usually under-fed.

The food should never be thrown amongst mud. If clean ground or turf be not handy, troughs should be used. See that the weaker birds get some. As to the quantity to be given per head, it is almost impossible to give a cast-iron rule. When laying a hen will eat three times as much as when off laying, and breeds differ, some producing eggs on half the food that others will. The feeder's discretion must be the rule. As to what it takes to keep fowls see under heading "Profits on Poultry."

FOOD FOR FOWLS.

The farmer should not be so unreasonable as to expect poultry to pay without at least as careful feeding as other stock; the grain should not be inferior. Wheat, heavy oats, or barley, or buckwheat should be given. A change of grain does good. For a change, maize may be given, but not regularly, unless for fattening. Heavy oats is the best grain for laying-hens. Boil the grain occasionally.

For the soft food, pollard mixed with a little oatmeal or barley-meal. Bran may be used, but requires more meal mixed with it. Potatoes, carrots, swedish turnips, mangolds, &c., boiled, are good, and mixed with pollard and meal help to make up bulk. Mix the soft food pretty dry.

In confinement, and in winter, the morning meal must be hot, and animal food should be given. Sheeps' heads and trotters, paunches and livers, blood, or any part of an animal usually wasted, may be boiled and cut up for them, and the liquor used to mix their food. In rabbit districts there should be no trouble about meat, but the rabbits must be cooked, or their flesh will scour the birds; and too much of it must not be given. Soft bones smashed up small make a fair substitute for meat. The water in which bones have been boiled is very nourishing.

MANAGEMENT WHEN AT LIBERTY ON A FARM.

The number should not exceed one hundred if housed together. Probably fifty will be found more profitable, but if housed quite apart, so that they cannot mix, many different lots of fifty may be kept on the same farm. Hens not for breeding will do as well without cocks being run with them, and the eggs keep longer fresh when infertile. Cockerels should be shut up by themselves when they begin to get troublesome.

Kill off the cross-bred hens just before their second moult, when they are about two and a half years old. An extra season may be allowed to known good layers. Where a large number is kept, in order to know the age, small numbered metal clips should be fixed on the pullets' legs.

If there be good water, gravel, and places for dusting within their reach, no extra attention is required, but the roosting-house must be very clean, and lime must be supplied if many eggs be sold. Feed twice a day. Soft food in the morning, grain at night. Table-scraps should not be wasted. If there be much scrub or other cover about, have a small yard in front of the roosting-house, and shut them in it till midday, when most will have laid. Leave the slide of the door open to let them come out of the house into this yard at daybreak.

To secure eggs in winter chickens should be reared early, so as to lay in autumn. Winter-laying breeds and crosses should be kept. Good shelter, hot morning food, extra meat-supply, help greatly. Crushed green bones and malt are very good. Cheap machines are now to be had for crushing bones, and malt is easily made by soaking one-third of a kerosene tin full of barley for twenty-four hours, draining thoroughly, turning over twice a day for a week, and then baking dry in an oven. A little pepper may be mixed with the food two or three times a week. A sprinkling of salt gives a relish; too much is a poison. In extra severe weather, for fifty fowls dissolve a piece of sulphate of iron the size of a small hazel nut in the water used to mix the soft food. It is very cheap stuff; but remember it is a poison in large doses.

To put a hen off sitting shut her up with a cockerel, which will keep her moving, or put her outside, fronting the other hens, in a coop, barred front and bottom.

PROFITS OF POULTRY-KEEPING.

It would be easy to give an estimate of the probable profits per annum on a given number of fowls if one knew the breed or cross kept, the exact strain the birds were bred from, the housing, shelter and management, the locality (varying the price of grain, &c.), whether the food was bought wholesale or retail, and whether the eggs were sold retail or to a store as new laid eggs or sent to auction as box-eggs.

It is plain that in face of widely varying conditions tables showing receipts and expenditure might be very misleading to many. In the attempt here made to show results that actual experience has proved can be realised it is to be understood that birds of the best-laying strains only must be used to cross with; that the housing, shelter, and management must be good; and that the eggs must be sold to the storekeeper as new laid eggs, not sent to auction.

These things being made clear, let us suppose a farmer to keep fifty laying-fowls at liberty—say, Minorca-Langshans. When in full swing, his year's accounts might be something like the following, taking Wellington prices as a standard:—

	£	s.	d.
Yield of eggs for the year—say, 580 dozen at 1s. (an average of about 140 per head)	29	0	0
25 hens, sold in autumn, at 1s. 6d. each	1	17	6
25 cockerels, sold at four months old, in November or December, at 2s. each	2	10	0
	33	7	6
Less cost of food—	£	s.	d.
Pollard 2,000lb.	4	10	0
Oatmeal, 100lb.	0	10	0
Oats, 30 bushels at 2s. 3d.	3	7	6
Wheat, 5 bushels at 4s.	1	0	0
Meat (livers, heads, &c.)	1	0	0
	10	7	6
Net profit	£23	0	0

In this case the birds will pick up a portion of the food they require, so that the quantity above given will be sufficient to rear fifty chickens every year—say, twenty-five pullets to take the place of old hens sold, and twenty-five cockerels, as well as feeding the laying stock, even if there be not a great supply of table-scrap.

The profit is 9s. per head of the laying stock, and it will be observed that the bulk of it is from egg-production.

Nothing has been allowed in the calculation for labour, rent, or interest on capital, the object being merely to show profit in excess of cost of food.

The price allowed for eggs—viz., 1s. per dozen—is not too high, the Minorca-Langshan cross being a good winter layer, and one-half of the laying stock at the beginning of winter being pullets just commencing to lay; so that there would be plenty of eggs in the dear months.

A return of 10s. per head net per annum from eggs alone, from fowls kept in confinement, is not an uncommon result. It has been done, to my knowledge, on asphalt, where the space was less than a square yard to every two fowls, but in this case the birds got a great deal of attention.

I am able to give an estimate of the margin of profit over the cost of food in rearing ducklings for the local market from a trial made last spring. They were sold at the age of ten weeks, and weighed a little over 4lb. each. The price obtained (wholesale) was 2s. 6d. per head, the cost of food (bought retail) 9d. per head: the profit on each was therefore 1s. 9d.—a handsome one, I think. These ducklings were not a cross of two pure breeds, but hatched from common shop-eggs. The same birds would have fetched almost double the price in the London market in April.

LARGE EGG-FARMS.

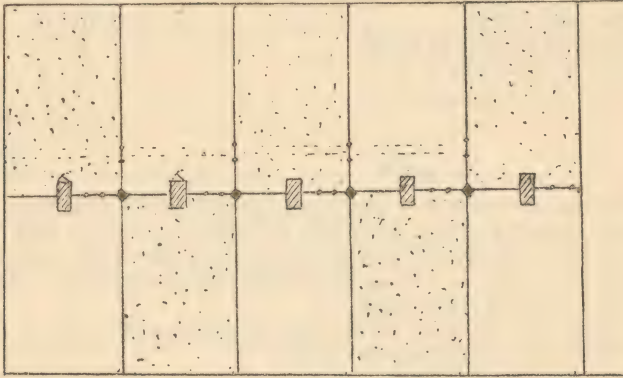
These have been, as a general rule, failures. The few successful ones have been developed from small beginnings by men with plenty of practical experience. The keeping of poultry is far more likely to be a success if made part of a system of mixed farming.

Begin on a small scale, selecting two or more breeds. Sitting-breeds and their crosses will not do very well, for to have large numbers wanting to sit would give too much work. Make sure the breeds chosen are suitable for your purpose and to the locality. Work these up to a very high standard before you make a start. Then breed cross-breeds for your poultry-farm.

Never cease striving to improve your pure-bred breeding-stock, even after success has been achieved with the cross-breds.

Keep the cross-breds in little flocks, entirely separate from each other. A sheltered situation, with good drainage, should be selected.

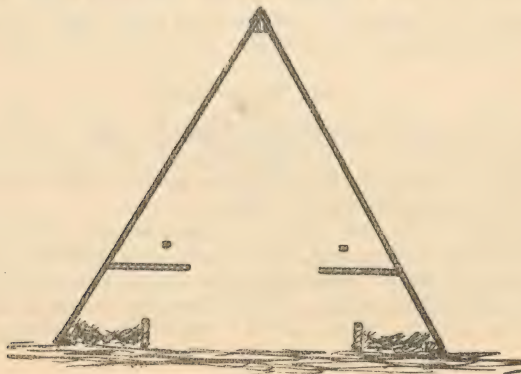
The division fences must be of such material as will provide shelter from the wind, except in a very sheltered place. The kind of yard shown in the plate enables a start to be made on a small scale at little expense, and the flock to be gradually increased as found profitable by adding new enclosures.

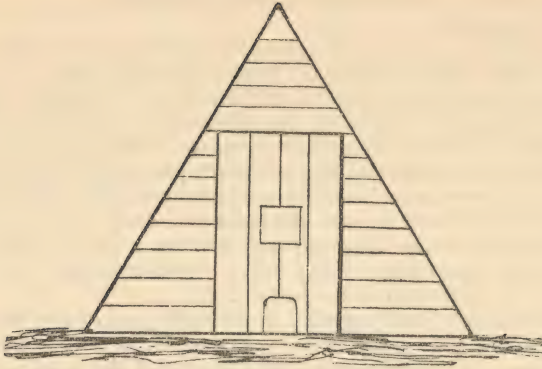


Thirty hens are to be run in each of the enclosures dotted. Each one contains one-eighth of an acre. On the spaces unoccupied grasses may be grown and cut for hay. The birds should be shifted two or three times a year, and every flock shifted at the same time. This kind of yard allows complete separation of the flocks (for they do not come in contact even through a chink in the fence) and an occasional shift on to fresh ground, both very important matters. There is not much chance of disease spreading through the flocks. The birds must be fed and managed as fowls in confinement, but, of course, do not need green food, and scarcely require a midday meal.

See that they have a shelter besides the roosting-house. Carefully keep down the vermin, and pick out and put by itself any bird that looks sick.

I would suggest the plan of house shown in Wright's "Book of Poultry," but cannot speak of it from personal experience. The width on ground is 7ft., height 6ft., depth from front to back 8ft. It requires under





300ft. of timber, and a handy man could make it himself. A door with an opening and slide at one end, and a similar opening with slide at the other end, over each of which there should be a pane of glass let into the wood. Serrated sheet-iron should be nailed along ridge and along top of door (when left open in summer) to prevent birds perching, and then flying over the fences.

As the breathing-space per head is small, care must be taken not to close the slide they use at night, and to have openings at the top to let out the foul air. The building should be painted white outside.

Another method of keeping fowls in large numbers is by means of movable coops. It has this advantage: that the birds can be moved on to stubbles or wherever they will prevent waste.

Under both the above systems care must be taken not to let the cross-bred birds get too fat to lay.

THE BREEDING-BIRDS.

Use your best birds. Do not mate any that are too closely related. Never breed from a bird that has been sickly or delicate even as a chicken.

Run a cock with eight to twelve hens. With a smaller number of hens there will usually be more cocks among the chickens, especially if the male parent be a cockerel. Pullets are not so good to breed from as two- to four-year-old hens, more especially if mated with a cockerel. A cock is generally useless after his fifth year. The eggs should be fertile after the birds have been five days together. There is no certain way of foretelling the sex of eggs by their appearance.

If the breeding stock be shut up, as I recommend, great care must be taken to supply everything they want. Early in the season a little hempseed will help them, and a little sulphate of iron in damp weather.

SETTING AND HATCHING.

Set from the beginning of June to the end of November. If breeding birds for export, set from beginning of August to end of October. Early chickens thrive best, and early pullets lay in autumn, when eggs are dear. The sooner eggs are set after they are laid the better they hatch. They should not be kept in a draughty or hot place. Mark the date on each egg with ink when you put it away.

Nests should be saucer-shaped, not deep enough for an egg to get on top of the others, or shallow enough to let them roll out. They should

be on the ground, unless vermin be very troublesome, or in a box filled with clean damp soil.

Sitting-breeds can always be trusted to hatch and rear, and of crosses with them, those hens that become broody generally can.

Some people find turkeys useful for hatching. When they once sit they can be kept sitting for months, if the chickens be removed when hatched. They require to be taken off and fed regularly. They can be made broody by being shut up in a covered box in a dark place, being first given a teaspoonful or so of port wine, and being regularly stuffed with soft food.

Sitting-hens are least trouble when set in a coop with a small shut-in run attached for them to come off and feed in. They should be fed on grain, and given water once a day only. If they cannot have a dusting place they must be examined for vermin.

The eggs are more easily spoiled in the early part of the hatching-time.

Twice or thrice during the last week sprinkle a small cupful of tepid water over the eggs. This is the more required if the weather be hot and the earth under the nest dry.

Do not make the common mistake of setting too many eggs under the hen.

Set two hens at the same time, if convenient, and when hatched give all the chicks to the one that promises to be the better mother. One clutch is less trouble than two, and, by giving the earlier-hatched chickens to one hen and the unhatched eggs to the other, fewer chicks will get crushed.

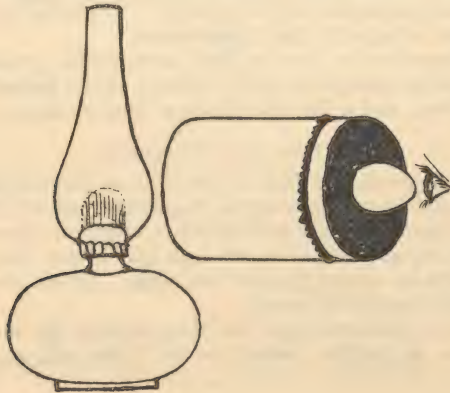
Some may require helping out of the shell. Do this very gently, and if blood flow put the egg back, for the chick is not ready to come out. To break a shell not chipped, tap round it near the thick end with a key, and break where it sounds hollow. The hollow place may also be found by holding up to the light.

TESTING EGGS.

On the seventh or eighth day test the eggs, and remove the infertile ones, which are then good to eat, or to keep to feed the chicks with. Use a round tin about 4in. in diameter and 4in. long, one end covered with thick black cloth, in which a hole is cut in the centre to admit the large end of an egg. Place in the position shown in the plate, close to a bright lamp. The fertile ones show a red streak or spot; the infertile ones are clear, like a new-laid egg.

Practice will enable one to tell the eggs that contain dead chicks later on, by the difference in their appearance from the others.

Return the eggs to the hen or incubator as quickly as possible.



HATCHING BY INCUBATOR.

This is a necessity where large numbers are kept. American-made incubators, of improved mechanism, are sold now at a moderate price that will hatch eggs that are a fortnight old. Only new-laid eggs would hatch in the old incubators, owing to the difficulty of keeping up an even temperature. Full directions are given with each machine.

Incubators may be used to hatch eggs to add to the clutches of sitting-hens, or to hatch for bringing up by an artificial mother or brooder. These brooders, with full directions for use, are sold by the incubator makers.

REARING.

Chicks do not require any food for the first twenty-four hours; after that they should get a little every two hours for a week, then every three hours for a month, and thereafter four times a day. The food for the first day or two should be hard-boiled eggs, chopped fine, shells and all, mixed with coarse oatmeal or stale bread-crumbs. Then oatmeal, mixed pretty firm with boiling water or skim-milk, and then crumbled up. Later on, oatmeal or barley-meal, mixed with pollard or with boiled potato. Start feeding at daybreak. An occasional change does good. After a week a little grain should be given at night; wheat is best, for there is no husk. Cracked maize should not be given regularly, but may benefit for a change. After grain is given, broken gravel must be always kept within their reach. Boil their grain occasionally.

The best way and least troublesome is to bring up in a movable coop, wired on bottom as well as on top, where they are safe from rain, wind, cats, and rats. Keep the coop on short turf, on well-drained ground. Chicks cannot be reared on a bare wooden floor. If the chicks be reared on bare ground, grass finely cut up should be given every day.

Milk is a useful addition to chicken diet; skimmed milk does very well.

Place water near them from the first, and keep it fresh and sweet.

A little chopped-up meat once a day strengthens them when feathering. During the time they are growing their feathers—say, after the first week—pure-bred chicks are much strengthened by getting sulphate of iron put into their water, in the proportion of a piece the size of a large pea to two quarts. The cross-breds are stronger, and do not require this. Giving an extra feed by candle-light helps early chicks.

Feed the hen by herself, if you can.

If the chicks show signs of diarrhoea change their food. A little flour in the soft food, boiled milk to mix it or drink, and dry rice at night are all good for diarrhoea.

Bone-dust mixed in the soft food twice a week is very strengthening, and prevents leg-weakness.

Chickens must not be over-fed, especially in hot weather, and no food should be left about.

If they appear to be drooping in hot weather, liver-weakness may be suspected. If a chick dies of it, on cutting it open its gall-bladder will be found very much enlarged. For this complaint, a very common one in confinement, feed moderately, and two or three times a week mix a tea-spoonful of carbonate of soda in the soft food for every dozen chicks of three weeks old; if older, a larger quantity.

When the chickens are half-grown it is a great mistake to neglect them. To make fine birds, they require care and special feeding till full grown. With this object they should be kept separate from the general flock, and shut up, so that they cannot run their flesh off. Movable coops will be found very useful. Separate the cockerels from the pullets. Do not shut up young birds of different ages together. See they are not overcrowded.

At four months the cockerels may be fattened and sold. Between four and six months they do not grow much, their strength going more to making feathers.

A crooked breast-bone injures the sale of a table-bird, and, to prevent this, chickens of the heavy breeds at least should not be allowed to roost till they are four months old, and even then should not be put on a round or narrow perch.

FATTENING.

Crosses with game require scarcely any, if well fed from the shell.

Put those to be fattened in a small yard, so that they have less running about than usual. Fast for a few hours, and then feed thrice a day on soft food. Put in only birds of the same age and bred together. There will be greater success with a small number.

The time will vary from seven to fourteen days, or thereabouts. After a certain point is reached they begin to go back, so watch them closely.

Pollard, mixed with oatmeal, barley-meal or maize-meal, to which after a day or two a little chopped fat is added, fattens well. Change their food when they seem to go off it. Give no grain unless well boiled. Full- or skim-milk instead of water helps to fatten. Give grit and fresh water.

COOP-FATTENING.

Pick six birds reared together and put in a coop in a sheltered place. The coop must be roomy, and barred in front and underneath. It is important that the bars in front should be 2in. apart, upright, and those underneath 1in. apart, lengthways. The trough for the food should be fixed across outside the bars, and above the level of the floor. Mix the food up very soft. Fast twelve hours when first put in the coop. Then feed twice or thrice a day, giving a little at a time, and when they have cleared that up giving more. Leave none in the troughs when they are done.

CAPONIZING.

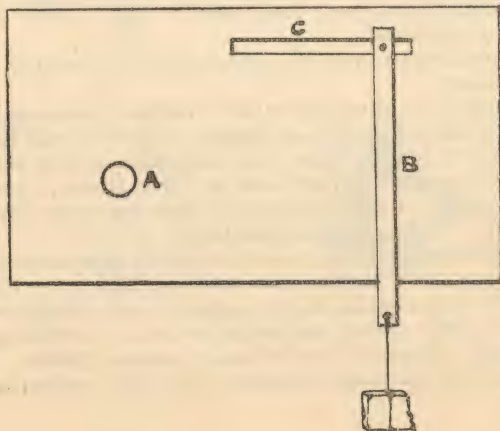
Capons are easily kept and fattened; they grow very large, and their flesh keeps tender till they are eighteen months old.

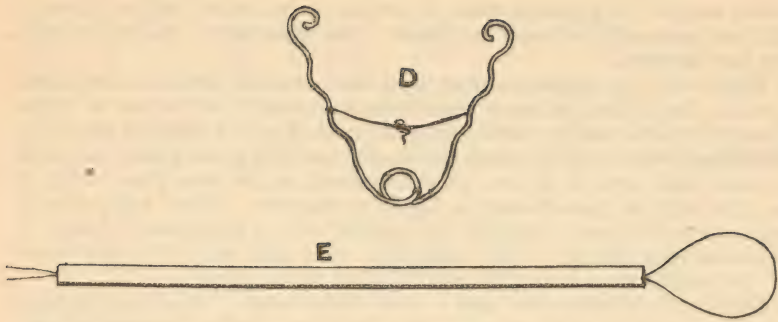
They will rear chickens if they are put in a coop at night, and the chickens put under them.

About four months is the age to operate. If any die, they die at once, from loss of blood, so are quite good to eat.

Fast the bird twenty-four hours, place it on its side on the board shown on the plate, fixing the wings with a strap run through the round

Caponizing Instruments.





Board, one-tenth actual size. D, Spring, actual size. E, Loop, actual size.

hole A, and placing the padded stick B (weighted with half a brick at the free end) over the legs. The other end of the stick may be shifted backwards and forwards in the slot C to suit the size of the bird. The uppermost leg should be drawn back behind the other.

Make a cut $1\frac{1}{2}$ in. long between the two last ribs close up to the back, taking care not to prick the bowels, and fix the spring D so as to keep the cut open. The ends of the spring take a side turn like a fishhook to enable it to catch. The thin skin over the bowels must be torn through, and the testicles are then seen attached to the back. The loop of a horsehair, run through a small pipe E, is hooked over the testicle, and then pulled tight. The testicle is detached by gently working the tube about, and is carefully lifted out. The cut is then sewn up with two or three single stitches of horsehair, the bird is turned, and the operation repeated on the other side. The bird may be held by an assistant instead of being fixed on a board.

Put in a cool, rather dark place, without a roost, and feed on soft food for a few days. If the bird swells much, it should be pricked to let the air out.

Some operators adopt the Chinese method, and pull the skin down over the ribs before cutting, so that when freed after the operation it will close the wound, and so avoid having to take up stitches.

Both testicles can be removed without turning the bird, but the operation requires extra skill and special instruments.

DISEASES OF POULTRY.

The space at my command forbids my going into this subject deeply. It may pay the fancier (whose fowls are of greater value to him) to doctor sick ones, but it will not pay the farmer.

To study how to prevent disease in the flock, however, will pay everyone. I have already spoken of this, and shall here describe one or two of the common, easily-treated diseases, &c., giving a few simple cheap remedies.

The causes of most diseases are inherited tendencies—under-feeding, over-feeding, want of exercise, want of grit, dirt, bad water, damp, draughts, or change to colder quarters, &c.

When a bird appears sick take it at once from the flock, for most of their complaints are very infectious.

Place it in a clean lime-washed coop in a sheltered place.

Cold.—A running at eyes and nostrils, and an occasional sneeze. Caused by chill. Keep warm, and feed on warm soft food, with a little meat and pepper added. Wash and dry the head, then wash again with

a weak solution of permanganate of potash (very cheap stuff), or Condyl's fluid, and pour a little down its throat. Do this daily. Neglected cold may turn to roup.

Roup.—If the discharge from eyes and nostrils becomes thick and offensive, the bird at the same time becoming weak, it is a case of roup. It may be treated as for a cold, the parts washed with a wash of ten drops carbolic acid with a gill of warm water, and the bird given a little sulphate of iron as well; but it is not generally worth while to try to cure it, if many be kept, for this disease is highly contagious. Other symptoms of roup are swelled eyes, canker in the comb or face, a membrane forming in the throat (diphtheria). The diphtheric roup and canker in the comb may be treated with flour of sulphur applied to the parts.

Diarrhæa.—Change the food. Give little water. Put flour, ground cinnamon, or chalk in the food. Give dry rice. Boil a few cloves (two for each bird), and mix their food with the liquor. If getting weak, give sulphate of iron as well. Advanced stages of this disease are infectious, and I should advise that birds be killed and buried if seen getting very bad.

Liver disease.—Kills more birds than any other. Generally inherited. Feeding on maize, confinement, and overfeeding, with want of grit, will cause it. It is worst in hot weather. The droppings are soft and yellow, the appetite is poor, and soft food is refused, but the crop is always full. The bird looks dull, and often walks lame. It is not worth while doctoring any but very mild cases. The best remedy is dandelion, given regularly, chopped up very fine, and put in the food. Never breed from birds that have shown a tendency to this disease.

Indigestion or Giddiness.—Give a dose of Epsom salts, one-fifth the amount given to a grown person, and feed moderately.

Leg-weakness.—Seen in growing cockerels. Give crushed bone or bonedust and sulphate of iron.

Gapes.—Seen in chickens. A worm in the windpipe; probably caused by drinking foul water. Strip a feather to near the point. Put the feather point down the windpipe, twisting sharply round and drawing out with worms sticking to it. Smoking with carbolic acid is an effectual but dangerous cure. A teaspoonful of spirits of turpentine to a pint of meal in the soft food is also a good remedy.

Soft Eggs.—Caused by want of lime or over-stimulating food. Supply lime, or give simpler food, as the case may be.

Egg-eating.—A vice for which prompt execution is the only remedy.

Moulting.—Not a disease, but the birds should have extra attention. They want warmth, good feeding, and a little sulphate of iron. The non-sitters suffer most. If a few be put together in a warm coop they suffer much less.

The Pip.—A horny substance forming on the tongue. Remove with the nail of the thumb, and wash the mouth with a disinfectant.

DUCKS.

Most of the rules given for fowls apply to ducks; but they are much more easily reared and fattened. Like fowls, they can be improved in their laying and as table-birds by selection; also, with them, a first cross is the most profitable bird, being a better layer and more easily reared than the pure.

The breeds to choose from are Aylesbury, Rouen, and Pekin. The Aylesbury is the best all-round bird in its pure state. The Pekin is the best layer. They may be crossed in any way; but the best crosses are: Rouen drake and Aylesbury duck, Pekin drake and Rouen duck.

A pure-bred drake may also be crossed with common ducks. Always choose the largest framed, unless breeding for eggs. The breeding-birds should be ten to twelve months at least, and four or five ducks run with each drake. They must not be harassed when laying. A pond is not essential unless they have been used to it.

To lay in winter they must be kept dry and warm and have hot cooked food. Feed sparingly after their moult, or they will get too fat to lay. Do not give much meat in hot weather, or they will shed their feathers.

HOUSES FOR DUCKS.

Any house will do that will keep them dry and warm in winter. One built of sod and roofed with thatch does capitally. Leave the upper half of the doorway open for ventilation. Keep them shut up till about nine o'clock in the morning, when they will all have laid. There should be a small yard in front of the house to feed and water them in.

DUCKLINGS.

It pays well to rear ducklings for the market. They are fit to kill at ten or eleven weeks old; if kept much longer they begin to moult. The eggs may be set under a hen, or in an incubator. They hatch in twenty-eight days. When hatched remove to a box lined with straw. They require no mother. Keep them clean. Sprinkle a little oatmeal in their water at first, and feed on pollard and meal mixed warm, giving them a little bone-dust and chopped-up meat two or three times a week. Feed four times a day, oftener at first. Milk now and then, instead of water, mixed in their food helps them. After five weeks they should get little water. They may also then have wheat put in their water at night. They should be all along, except the last week, supplied with green food, and fine grit or sand should be always kept in their water.

A small house does, but it must be kept clean. Put fresh straw in every morning. Feed and water them in a small yard outside. Do not let them lie in the sun in very hot weather or some will die of sunstroke.

For export, commence setting eggs in August and leave off early in December.

GEESE.

For breeding-stock get a Toulouse gander and four Embden geese, and get them as large framed as possible, and two years old or over. Geese live to a great age, and these need not be changed, but kept as breeders as long as they prove satisfactory. They should be shut up at night. A small pond, about 2ft. deep or more, is almost a necessity. Give hot food early in the season, to induce early laying.

GOSLINGS.

Geese make good sitters and mothers. Eggs may also be set under hens, and the birds given to the goose to rear with her own. Nests should be on the ground. Moisten the eggs well. They take thirty days to hatch. Feed as directed for ducklings till fledged, and they will then feed themselves. If intended to be fattened for market at four to six months old they must be fed right on, and may be shut up in a slightly darkened place and fed on meal and oats for a short time to finish off. Geese fatten well on stubble fields. Fed as above directed they should weigh about 10lb. live weight. The quality of the flesh depends on the feeding.

TURKEYS.

The American bronze should be selected to cross with the common turkey. Large-framed birds, two years or over, are most suitable, and in-

breeding must be carefully avoided. They require plenty of room, and wander far, so should be fed at night to bring them home.

HATCHING AND REARING TURKEYS.

The gobblers should be shut off from the rearing-ground. Early-reared birds do best. Turkeys sit so very close that they often require to be taken off the nest and fed. A few eggs should be set under hens and added to the turkey's flock. A little before the eggs are hatched take her off the nest and clean it out, and see that she is clear of vermin. The eggs take twenty-eight or twenty-nine days to hatch.

Turkeys are hard to rear. The best helps are dryness and cleanliness and freedom from lice. Keep them inside for a day or two, then put the mother in a coop on short dry grass. Let her out when the young ones are three weeks old, and feed them under a frame.

For the first week their food should be hard-boiled eggs with chopped dandelion leaves. Curd of sour milk with tops of onions or dock, cut fine, may also be given. They may be afterwards fed on pollard and meal, like chickens, and may get a little grain. Change the food now and then. Bonemeal and meat must be supplied, and milk will do no harm. The growing birds should perch on flat roosts only.

Lice kill about half the young turkeys that die.

Open sheds make the best roosting-places, and short grass the best runs.

Turkey-cocks should weigh 12lb. or over, and hens 7lb. or over, at twelve months old.

Fatten in a slightly-darkened shed, the light being let in while feeding, and give them meal mixed with boiled potatoes. Boiled corn may be given for a change.

THE CLASS OF BIRDS FOR EXPORT.

Spring chickens: Three to four months old, not less than 3½lb. live weight.

Cockerels and pullets: Four to seven months old.

Capons may be as old as twelve months.

The class of fowl most in favour in the London market is one of the Dorking type, with plenty of breast-meat, a white skin, and, for preference, white legs, and feet with five toes on each. A good breast and a white skin are the more important points, the others being a matter of fancy. For birds to use, see under heading "Crosses for the Table."

Ducklings: Ten to twelve weeks, not under 4lb. live weight.

Ducks: Not over six months old.

With regard to ducks and ducklings, size and condition are everything.

Use the crosses recommended.

Geese: Large birds, and in prime condition only, should be shipped. See under headings "Geese," and "Goslings."

Turkeys: Not over twelve months old. Gobblers must not be less than 12lb. live weight; hens, 8lb. Birds of 16lb. to 18lb. bring top price.

In all classes, the heaviest, best-conditioned birds find the best market, and return by far the largest net profit. It will not pay to ship any but really first-class birds.

TIME TO SHIP.

Fowls and ducks must be shipped so as to arrive in London between the beginning of March and the middle of May. The market is usually highest in the first week of May, but rapidly falls after that.

Geese and turkeys are sold to the best advantage shortly before Christmas, especially heavy weights. It is questionable whether it is worth while shipping to London at other times of the year; but it is worthy of note that the times mentioned are very convenient for New Zealand producers.

PRICES OBTAINABLE IN LONDON.

The prices obtained by Melbourne shippers last season were, according to recent advices: Best ducklings, 8s. to 9s. 6d. per pair; best chickens, 3s. 6d. to 4s. 6d. each; best gobblers, 10s. to 11s. each (young poults). A shipment of gobblers last Christmas brought up to 20s. each.

KILLING AND PREPARING.

All classes of poultry should be fasted sixteen to twenty-four hours, according to age, &c., before being killed; and their feet should be washed.

Fowls: The Melbourne shippers now break the birds' necks, and hang them up by the legs long enough to let the blood collect in the head and neck. They formerly bled them. I should advise either to break the neck in poulterer's fashion, as above, or to take the bird by the wing and legs and stun it by hitting its head against a post, then to hang it up by legs, and run the blade of a penknife into the brain through the roof of the mouth. It will thus be properly bled, and the flesh will be white. In either case, the head should be carefully tied up in paper, to avoid soiling the bird during plucking and afterwards. The legs should be tied before killing.

Ducks may be killed the same way as fowls. They must be hung up at least ten minutes to bleed. Some people cut their throats, and they bleed well this way. The head must be carefully tied up in paper.

Geese: Lock their wings and hang up by the legs. Take by the beak with one hand, and stun by a blow from a sapling on the back of the head, then run a penknife into the brain through the roof of the mouth. After being thoroughly bled tie up the head in paper.

Turkeys: The neck may be broken and the bird hung up, or it may be stunned by a blow on the head, and then bled as above. Tie up the head in paper.

Rough handling and killing is specially to be avoided, as tending to injure the appearance of the birds.

After the birds have been sufficiently bled, and while still warm, they should be plucked. If allowed to get cold the skin is apt to tear, and this is against the birds fetching a good price. Care should be taken to have clean hands, and to avoid soiling their skins, for washing them is objectionable. The less handling the breast gets the better. They should be plucked clean, except the head, upper part of neck, and wings. Singeing is unnecessary, and rather a disadvantage. The only other thing to be done is to draw the gut. This is done by inserting a steel hook through the vent, hooking the gut, and pulling it out.

The birds should not be cut at all. Shippers in Melbourne have given up trussing them.

FREEZING AND PACKING.

Birds should be frozen separately as soon as they are cold. They must be cold right through, however, or they will not thaw out satisfactorily.

The method of packing now adopted in Melbourne is as follows:—

Chickens, ducks, and ducklings: One-decker white deal tasteless wood boxes, the ends being inch wood, and the top, bottom, and sides half-inch. The measurement is 2ft. 6in. long, 2ft. broad, 6in. deep. The birds are packed lengthways to the case, in three rows, four in a row, and three single ones put in as wedges on the top, making fifteen in all. The boxes are lined inside with butter-cloth, and white blotting-paper, in square pieces, is placed between the birds to absorb moisture, and prevent the flesh from touching. Two sheets of white blotting-paper are placed on the floor of the box, and two more on the top before putting the lid on. Holes should be bored round the box to admit the air freely.

For turkeys, boxes 2ft. 7in. long, 2ft. 2in. broad, and 8in. deep, are used. Eight turkeys are put in each, packed as above described. There is a 2in. opening all round the sides and ends of the boxes, which are bound all round with $\frac{1}{2}$ in. hoop iron.

As a free current of air around the boxes is important, I would suggest that, instead of hoop-iron, battens should be used for all poultry boxes, so as to prevent their forming a solid mass when packed together on board ship.

A very important point in shipping is to class evenly—cockerels together, and also birds of even weight and quality, and on no account to put in an inferior bird, or one that has been torn in plucking, to injure the sale of the others.

Game is shipped in the feathers, packed the same way as fowls, after being drawn. Attention must be paid to minimum freights.

SHIPPING EGGS.

This will yet be a more important industry than the raising of birds for shipment. The production and sale of eggs pays the poultryman much better than selling his birds, and there is an inexhaustible market for eggs in London at the very time of the year when they are cheapest and most difficult to sell here. They could be shipped up to the end of November, to arrive in London in November, December, and January, when eggs are dearest there. After January eggs are plentiful, and prices fall.

Eggs cannot be shipped frozen, as they mostly burst in the process of thawing. There should not be any great difficulty in shipping successfully in a cool chamber. Six weeks on board ship is not a long time; it would be easy to keep eggs good for double that length of time ashore at as low a temperature. Unfortunately there are no cool-chambers so early in the season as October, though if the trade were once developed cool-chambers would soon be available.

The hints here given, it must be understood, are not the result of actual experiment in shipping long distances. They are the result of experience in preserving and shipping short distances only.

The points to be observed in preparing eggs for shipment, to be sold as preserved eggs, are:—

1. To have them perfectly fresh and new laid when preserved, packed, and shipped. A most essential point.

2. To close the pores of the shell. This is a safeguard against decay, and prevents shrinkage of the contents of the egg by evaporation. It also prevents its taking a taint from its packing, or from other cargo placed near it. Dip in melted beeswax or rub with lard or salt butter. In either case no more should be used than will close the pores. Wax is better than lard, butter, or fat, but much dearer. Dipping in a solution of gum arabic does very well.

3. To pack so that the eggs do not touch, and, if it can be done to advantage, to pack in an upright position. The upright position tends to prevent the yolk sticking to the shell, but increases the risk of breakage.

Any strong case or barrel will do to pack in. Well ripened oat or barley straw, free from damp or taint, may be used, 2in. of straw at bottom sides and top, and lin. between each layer of eggs. A finer quality should be used to wrap the eggs, twenty, thirty, forty, or fifty dozen in each case. To insure well-formed shells the hens should have a plentiful supply of lime-forming material, and no cracked or dirty egg should be packed.

If eggs are shipped to sell as table eggs and expected to bring a higher price than preserved eggs, it is essential that they should not show any signs of treatment. The points to be observed are,—

1. To have them infertile. This is done by either keeping no cocks with the hens or shutting the cocks up for a fortnight before beginning to save the eggs. Infertile eggs have been proved to keep fresh much longer than fertile ones, and the latter would, besides, run the risk of starting to hatch in the tropics. This point is not quite so important when the pores are closed with wax, &c., for then the male germ is killed by excluding the air, but even preserved eggs keep better if infertile from the first.

2. To have them quite fresh and new laid.

3. To pack with materials from which they could not take a taint. Straw, hay, or other material first made sterile by being kiln-dried, or subjected for an hour to, say, 250 degrees of heat Fahrenheit, should be used. The Canadian system of packing—namely, upright, in holes in cardboard—answers well, but perhaps would be found too expensive.

4. To exclude the air as much as possible, as by wrapping each egg in waxed paper. Dipping in boiling water for five seconds helps to exclude the air, and is a good preservative, but would probably injure the sale as a fresh egg.

5. To pack so that they do not touch, and in an upright position.

There are two methods of assisting the eggs to keep fresh that I should like to mention. Both are preventive of the germs of decay. One is to wrap each egg in tissue-paper, prepared with salicylic acid. The other is to smoke with sulphur: this may be done by filling a tight barrel two-thirds full of eggs without packing, and firing a pound of sulphur in an iron shovel in the vacant space, then closing the top for an hour.

[Since the above was put in type I have had advice that a small shipment of eggs made by me, through the New Zealand Loan and Mercantile Agency Company (Limited), was sold in London in December last. The packing was dry hay, and the latter set of rules were carefully attended to, with the addition that each egg was wrapped in paper prepared with salicylic acid. The shipment arrived in first-rate condition, although sent as ordinary cargo, and not in a cool-chamber. The price realised was 1s. per dozen, the highest obtainable for imported eggs. The cost of packing, freight, and charges was equal to a little over 3d. per dozen.]

